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**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
PATENT EXAMINING OPERATION**

APPLICANT	:	Keith D. Martin
POST OFFICE ADDRESS	:	1450 West Lynn Street Coal Township, PA 17866
INVENTION	:	SUPPORT ASSEMBLY FOR HOLDING A SWIMMING POOL COVER IN PLACE ON A SWIMMING POOL
ATTORNEYS	:	Caesar, Rivise, Bernstein, Cohen & Pokotilow, Ltd. Seven Penn Center - 12 <sup>th</sup> Floor 1635 Market Street Philadelphia, PA 19103

**TO ALL WHOM IT MAY CONCERN:**

Be it known that I, Keith D. Martin, a citizen of the United States of America, residing in Coal Township, County of North Umberland, Commonwealth of Pennsylvania, have made a certain new and useful invention in a Support Assembly for Holding a Swimming Pool Cover in Place on a Swimming Pool of which the following is a specification.

## FIELD OF THE INVENTION

This invention relates generally to swimming pools and more particularly to assemblies for use with a swimming pool cover to support the cover in place over a swimming pool.

## BACKGROUND OF THE INVENTION

Various United States patents disclose supports for swimming pool covers to hold the covers in place over a pool, so that when the cover is in place it serve to protect the pool, e.g., prevent debris from entering the pool, or protect persons or animal from falling into the pool. For example, United States Letters Patent No. 4,951,327 (Del Gorio, Sr.) discloses a swimming pool cover support system having a central post with a base arranged to be disposed in the center of an above-ground pool. The central post is extendable so that its upper end can be located at an elevation above the coping on the edge of the pool. On the top of the post there is a hub or center joint from which a plurality of rigid support arms extend. At the free end of each of the support arms is a side brace arranged for disposition on the coping or rim of the pool.

United States Letters Patent No. 6,442,773 (Kopyar et al.) discloses a pool cover support frame having a central vertical support member arranged to be disposed on the base of the pool, that is, at the center of the bottom of the pool. Extending upward from the base is a telescoping vertical support member. At the top of the support member is a hub from which plural slightly arcuate spokes extend. The spokes attach to the edge of the pools via clamps to cause them to flex to form a dome shape.

United States Letters Patent No. 5,259,077 (Hager et al.) discloses a pool cover in the form of an extendable post which is mounted via four extending ropes or cables from its bottom end to the coping on an above-ground pool. The top end of the post includes a cap over which a cover may be placed so that the cover will be conical in shape.

United States Letters Patent No. 5,450,635 (Coffey) discloses a domed cover for use with swimming pools which include a framework structure having a central hub from which a plurality of arms extend outward and downward. Each of the arms is a rigid member. At the

lower end of each arm is a bracket with a screw to form a vice-like arrangement for securement to the edge of the pool.

Other United States Patents disclosing swimming pool covers and/or supports are: 3,683,427 (Burkholz et al.), 4,092,809 (Bellas et al.), 5,621,926 (La Madeleine), 5,687,432 (Genzel), 6,381,767 (Brashears), and 6,487,734 (First).

5           While the devices of the foregoing may be generally suitable for their intended purposes they still leave much to be desired from the standpoints of ability to be stored in a compact state until ready for use, ease of assembly and disassembly, simplicity of construction and low cost.

### SUMMARY OF THE INVENTION

10           A pool cover support assembly for supporting a pool cover, e.g., a flexible sheet or panel, over a swimming pool, e.g., an above ground pool. The pool has a bottom surface and a side wall. The sidewall of the pool terminates in a top surface disposed above the surface of the water in the pool.

15           The cover support assembly basically comprises a central upstanding post and plural flexible non-self supporting straps. The upstanding post, e.g., plural telescoping sections, has a bottom end portion, e.g., a flanged base, and a top end portion, e.g., a domed cap. The bottom end portion of the upstanding post is adapted for disposition on the bottom surface of the pool. The top end portion of the upstanding post is located above the top surface of the sidewall of the pool. Each one of the plurality of flexible straps includes a first end portion arranged for securement to the top end portion, e.g., the domed cap, of upstanding post and  
20           a second end portion for releasable securement to a portion of the pool adjacent the top surface of the sidewall.

25           Each of the straps is arranged to be tightened to cause it to assume a generally linear configuration, whereupon when the first end portion of each of the straps is releasably secured to the top end portion of the upstanding post and the second end portion of each of the straps is releasably secured to the pool adjacent the sidewall of the pool and the straps are tightened,

the straps form a generally downwardly directed conically shaped umbrella-like-frame over which the pool cover can be disposed.

In accordance with one preferred aspect of this invention each of the straps includes a buckle for adjusting the length of the strap.

#### DESCRIPTION OF THE DRAWING

5 Fig. 1 is an isometric view of one preferred embodiment of the pool cover support assembly of this invention shown in place ready for supporting a conventional flexible sheet pool cover over a conventional above-ground swimming pool, with a portion of the pool being cut-away so that a portion of the assembly can be seen;

10 Fig. 2 is an isometric view like that of Fig. 1, but showing the pool cover disposed over the pool cover support assembly, and with portions of the pool cover and pool being cut-away so that a portion of the assembly can be seen;

Fig. 3 is an enlarged sectional view of a portion, e.g., a cap for the central support post, of the assembly of Fig. 1;

15 Fig. 4 is an isometric view of a portion of the pool cover support assembly shown in Fig. 1; and

Fig. 5 is an enlarged isometric view of a portion of the swimming pool shown within the circular area of Fig. 1 designated by the legend "FIG. 5" and showing a portion of the pool cover support assembly.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

20 Referring now to the various figures of the drawing wherein like reference characters refer to like parts, there is shown at 20 in Fig. 1 one exemplary embodiment of a swimming pool cover support assembly constructed in accordance with this invention. The assembly 20 basically comprises a post 22, a base sub-assembly 24, a cap sub-assembly 26 and a plurality of extendable straps 28. Each of those components will be described in detail later. Suffice it  
25 to state that the cover support assembly 20 is arranged to be used with any type of swimming pool cover 10 (Fig. 2), so long as the cover is a flexible sheet which has the ability to generally

conform to the shape of anything over which it is draped, and with any type of swimming pool 12, so long as the swimming pool has some peripheral portion, e.g., a top rail of a sidewall, to which the extendable straps 28 of the assembly 20 can be releasably secured. In the embodiment shown the pool 12 is in the form a conventional above-ground pool of circular shape.

5           Before describing the cover support assembly 20 a brief description of the pool cover 10 and of the pool 12 is in order. To that end, as can be seen in Fig. 1 the pool 12 includes a bottom wall or surface 12A and a circular, peripheral sidewall 12B. The top surface of the sidewall 12B is in the form of a coping or rail 12C. The rail is formed of a plurality of arcuate sections (not shown), which are secured together to form a circle, with the number of sections  
10           being dependent upon the diameter of the pool. The circular top rail has a downwardly extending peripheral edge 12D (Fig. 2). The downwardly extending edge 12D is arranged to serve as a connection point for each of the extendable straps 28 of the cover support assembly 20 (as will be described later).

          As is also conventional the pool's sidewalls are reinforced by plural supports 12E, each  
15           of which includes a cap 12F (Fig. 1) that is secured to the pool's top rail. The caps 12F add strength to the top rail. The number of sidewall supports 12E is also a function of the diameter of the pool. It should be pointed out at this juncture that the pool 12 is merely exemplary of many types of above-ground or in-ground pools, spas, etc. for which the subject invention has application.

20           As best seen in Fig. 2 the pool cover 10 is a sheet of flexible material, e.g., vinyl, rubber, rubberized cloth, plasticized non-woven fabric, etc. Preferably the material of the cover is resistant to weather, ultraviolet rays, insects, etc. and is rugged and strong since the cover will likely be exposed to the elements for extended periods of time, e.g., in the winter, when the pool is not in use. The cover can be of any shape, e.g., circular, oval, square, rectangular,  
25           depending upon the shape of the pool to be covered, provided that the size of the cover is sufficient to cover the entire surface of the pool and some portion of the pool's sidewall or

periphery. In the embodiment shown, since the pool 12 is of circular shape, the cover 10 is preferably round and of sufficient size so that its peripheral edge 10A extends beyond the periphery of the pool's sidewall 12B and drapes below the downwardly extending peripheral edge 12D of the top rail 12C.

Turning now to Figs. 1 and 3 - 5, the details of the components of the cover support assembly 20 will now be described. The post 22 serves as a central support member for the cover 10 and is preferably in the form of a tubular member, such as conventional plastic tubing used for plumbing applications. The lower end of the post 22 is arranged to be releasably secured within the base 24 so that when the post is inserted therein (as will be described shortly) it extends in a vertically upward orientation, like shown in Figs. 1, 2 and 4. The base 24 provides stability to the post.

As best seen in Fig. 4, the base comprises a hollow member having circular planar bottom wall 24A and a conically shaped sidewall 24B projecting upward therefrom at an acute angle. The top end of the sidewall 24B merges into a tubular socket 24C. The bottom wall 24A of the base is arranged to be disposed on the bottom wall or surface 12A of the pool 12. The socket 24C of the base 24 is arranged to receive the lower end of the post 22. To that end the socket 24C is of circular cross section having an inside diameter slightly larger than the outside diameter of post 22 to enable the post to be fit therein. The diameter of the bottom wall 24A is sufficiently large to provide stability to hold the post 22 in a vertical orientation. The base 24 is preferably constructed of the same material as the post section 22.

Referring now to Fig. 3 and 4, the details of the cap assembly 26 will be described. The cap sub-assembly 26 is mounted and secured on the upper end of the post 22. The cap sub-assembly 26 basically comprises a somewhat dome shaped circular member 26A having a plurality of slots 26B equidistantly spaced about the periphery of the member 26A. The number of slots 26B in the member 24 is dependent on the number of straps used in the system, since each slot serves as a connection point for a respective strap. A hole 26C is located in the center of the member 26A. A downwardly extending cup shaped socket 26D is secured to the

undersurface of the member 26A by means of a bolt 26E extending through the hole 26C and an associated nut 26F. The socket 26D is arranged to receive the upper end of the post 22. To that end, the socket 26D is of circular cross section having an inside diameter slightly larger than the outside diameter of the post 22 to enable the post to be fit therein. The socket 26D is preferably constructed of the same material as the post section 22. The dome-shaped member 26A is preferably formed of metal to provide some weight to the assembly 20, i.e., to enable the member to serve as a ballast to hold the assembly. If desired, however, the member 26B may also be constructed of the same material as the post and base assembly 24.

When the cover support assembly 20 is assembled and in place within the pool, water from the pool is enabled to enter into the hollow post and base to displace any air therein, which may tend to cause the assembly to move, drift or otherwise be unstable. Moreover, the weight provided by the metal, dome-shaped member 26A of the cap assembly 26 provides additional ballast weight to ensure that the assembly 20 remains in place and doesn't drift or otherwise become displaced from the position in which it is put by the user.

As best seen in Figs. 3 and 4 each of the slots 26B of the dome member 26 is arranged to releasably secure a respective one of the extendable straps 28 of the cover support assembly 20 to it. Each of the extendable straps 28 is an elongated flexible, flaccid (non-self supporting) member having an inner end 28A (Fig. 4) and an outer end 28B (Figs. 2 and 5). The inner and outer ends 28A and 28B, respectively, of each of the straps 28 is of identical construction. In particular, as best seen in Fig. 5, each end of each strap 28 includes a J-shaped clip 30 and a retainer sleeve 32. The free end of the strap 28 at the inner end 28A is extended through the retainer sleeve 32, through a slot 34 in the J-clip 30, and back through the retainer sleeve 32. The retainer sleeve 32 is a conventional member that frictionally holds the strap portions passing through it in place. The free end of the J-clip 30 is in the form of a lip or flange (not shown). The J-clip 30 at the inner end of each strap 28 is arranged to be inserted into an associated slot 26B in the dome-shaped member of the cap sub-assembly to releasably secure the strap to that member.

When all the straps 28 are connected to the cap sub-assembly 26 as just described, and the post 22 and its supporting base sub-assembly 24 is placed in the center of the pool 12, the straps 28 are then extended outward and downward for connection to the periphery of the pool, e.g., the peripheral edge 12D of the top rail 12C. This is accomplished by placing the J-clip 30 on the outer end 28B of each strap so that its lip (not shown) extends under the periphery of the top rail as shown in Fig. 5. Then the user pulls on the outer free end of the strap 28 to cause it to slide with respect to the clip 30 and retainer sleeve 32 to apply tension to the strap to shorten the strap. This action takes up most of the slack in the strap so that the strap becomes generally linear as shown in Figs. 1 and 2. The retainer sleeve holds the strap in this tightened state. Once all the straps are connected to the pool's rail, each strap can be tightened further to make each strap as straight as possible.

As best seen in Fig. 2 when all of the straps are so connected and tightened, they extend outward and downward from the top of the post 22 to form an umbrella-like frame, with the cap sub-assembly 26 forming the apex of the frame. The cover 10 can then be placed or draped over the assembly 20 so that it drapes downward from the cap sub-assembly in a manner similar to the roof portion of a circular circus tent. Since the cover 10 drapes downward from the apex to the periphery of the pool, it will be resistant to the accumulation of snow, leaves, and/or other debris thereon, i.e., such materials will fall off of the cover. This is of particular importance in cold weather applications where snow and/or sleet is a concern, and in any areas where the accumulation of falling debris, such as leaves, is a concern.

In order to ensure that the cover is least likely to have any snow, sleet, leaves or other debris accumulate on it, the cover is preferably pulled taut after it is draped over the assembly 20. This action prevents the cover from sagging in spots, which could serve as the site for the accumulation of debris. Preferably the cover 10 is held in its taut state by use of plural conventional cover locks 14 (Fig. 2) secure the cover to the pool's top rail. The cover locks 14 also serve to prevent the cover 10 from blowing or otherwise becoming displaced in adverse weather conditions. In the embodiment shown four cover locks are used per top rail section.



Each of the straps 28 can be of any construction so long as it is flaccid, e.g., can be rolled up or otherwise folded into a very compact configuration for storage and then extended and tightened to straighten it. Thus, each strap can be a web of a woven, moisture impervious rugged and strong material (e.g., nylon). Moreover, each strap 28 can be a single or multiple strand member such as a rope or cable of nylon or any other suitable material.

5            Since the cap sub-assembly 26 on the upper end of the post 22 forms the apex of the cover support assembly 20 of this invention, the assembly is arranged so that when it is assembled the cap sub-assembly 26 is located at a desired height above the peripheral edge, e.g., the top rail of the pool 12. This creates a conically shaped support for the cover to ensure that debris doesn't accumulate on the cover when the cover is draped over the pool support  
10           assembly 20 and then pulled taut. If desired, the post 22 may only include a single section, whose length is sufficient to hold the cap sub-assembly at the desired height with respect to the pool or may be made up of plural telescoping sections to provide adjustability for the height of the post. For example, the post may be made of two sections that can be telescoped together for any desired amount of overlap so that the height of the cap sub-assembly can be adjusted  
15           with respect to the pool's top rail. This adjustability can be accomplished in various ways. One way makes use of a plural longitudinally spaced holes (not shown) in the two telescoping sections which can be aligned to establish the desired height of the post, and then a pin, screw or some other member (not shown) can be placed in the aligned holes to hold the two sections in that position.

20           As should be appreciated by those skilled in the art the cover support assembly 20 of this invention is simple in construction, has a low parts count, can be readily assembled and disassembled and when disassembled can be stored away in a compact state, e.g., the flaccid straps can be readily rolled up or otherwise configured into a very compact state. Moreover, by using adjustable length straps the subject invention can be used with any size or shape of  
25           pool, even irregularly shaped pools, since each strap can be individually adjusted to the desired length to reach the portion of the periphery of the pool to which that strap will be connected.

It should be pointed out that the cover support assembly 20 of this invention may be provided to the user in a fully pre-assembled state, in a partially pre-assembled state (e.g., the subassembly 26 may be pre-assembled and/or the straps connected to it) or the assembly 20 may be provided to the user in the form of a kit of parts where none of the components are pre-assembled. Moreover, if the assembly is provided as a kit of parts, the straps need not be pre-made. Instead, the kit may include continuous roll of strap material to enable the user to cut the desired number and length of straps 28 for the assembly. The clips and buckles for each of the straps can then be attached to the straps by the user. It should be pointed out that the straps need not be releasably securable to the cap subassembly, but they should be releasably securable to the pool.

Without further elaboration the foregoing will so fully illustrate my invention that others may, by applying current or future knowledge, adopt the same for use under various conditions of service.